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MARTINE PENILLA & GENCARELLA, LLP
710 LAKEWAY DRIVE
SUITE 200
SUNNYVALE, CA 94085

EXAMINER

DAO, THUY CHAN

ART UNIT	PAPER NUMBER
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2192

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/690,056

Applicant(s)

GOVE, DARRYL J.

Examiner

Thuy Dao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-9,11,13-18,20 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-9,11,13-18,20 and 22-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on November 23, 2007 has been entered.

2. Claims 1-2, 4, 6-9, 11, 13-18, 20, and 22-26 have been examined.

Response to Amendments

3. Per Applicant's request, claims 1, 4, 6-7, 9, 11, 13-14, 18, 20, and 22-23 have been amended and claims 3, 5, 10, 12, 19, and 21 have been canceled.

Response to Arguments

4. Rejections under 35 USC 102 (Remarks, pp. 10-15):

Claim 1 is the representative claim (Remarks, page 14, lines 12-18).

After further consideration, the examiner notes that Chilimbi also teaches the newly added limitations.

a) Regarding new limitations "wherein the first trigger condition is based on an elapsed time of execution" (Remarks, pp. 10-12 and claim 1, line 14):

Per the plain language of the claims, Chilimbi explicitly teaches:

switching execution from the original set of instructions to the instrumented version of the original set of instructions (e.g., FIG. 2 and 3, switching execution from original code (Checking Code) 230/330 to the instrumented version (Instrumented Code) 220/320, col.6: 31 – col.7: 13)

upon encountering a first trigger condition (e.g., FIG. 2 and 3, Entry Check 240/340 and Back-Edge Check 241/341, col.7: 14-67),

wherein the first trigger condition is based on an elapsed time of execution (e.g., col.3: 52 – col.4: 29, execution time of original instructions must be lower than

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100% time of total execution (an elapsed time of execution), wherein if a checking phase counter "nCheck" reaches zero, execution of the program is transitioned to the instrumented code as acknowledged by the Applicant - see Remarks, page 10, lines 16-21).

b) Regarding new limitations "the switching of execution from the original set of instructions to the instrumented version of the original set of instructions to occur at a next location of known state in the original set of instructions" (Remarks, page 11, lines 8-11 and claim 1, lines 15-17):

Chilimbi explicitly teaches:

a known state in the original set of instructions (e.g., FIG. 3, original set of instructions (Checking Code) 330, a known state as 330-B of said original set of instructions (Checking Code) 330, col.6: 31 – col.7: 13),

encountering the first trigger condition (e.g., encountering Back-Edge Check 341, col.7: 14-67)

causes the switching of execution from the original set of instructions to the instrumented version of the original set of instructions (e.g., FIG. 3, switching to Instrumented Code 320, col.6: 31 – col.7: 13)

to occur at a next location of known state in the original set of instructions (e.g., a know state 330-B as set forth above, encountering the Back-Edge Check 341, following 371, and switching to A of Instrumented Code 320, col.7: 14-67).

c) Regarding new limitations "wherein the second trigger condition is based on an elapsed time of execution" (Remarks, pp. 13-15 and claim 1, line 23):

Per the plain language of the claims, Chilimbi explicitly teaches:

switching execution from the instrumented version of the original set of instructions back to the original set of instructions (e.g., FIG. 3, switching execution from the instrumented version (Instrumented Code) 320 to the original code (Checking Code) 330, col.6: 31 – col.7: 13)

upon encountering a second trigger condition (e.g., FIG. 2 and 3, Entry Check 240/340 and Back-Edge Check 241/341, col.7: 14-67),

wherein the second trigger condition is based on an elapsed time of execution (e.g., col.3: 52 – col.4: 29, execution time of the instrumented version must be lower than 100% time of total execution (an elapsed time of execution), wherein if a profiling phase counter “nInstr” reaches zero, execution of the program is transitioned to the original instructions (Checking Code) 330 as acknowledged by the Applicant - see Remarks, page 13:25 – page: 14: 4).

d) Regarding new limitations “the switching of execution from the instrumented version of the original set of instructions back to the original set of instructions to occur at a next location of known state in the instrumented version of the original set of instructions” (Remarks, page 13, lines 4-8 and claim 1, lines 24-27):

Chilimbi explicitly teaches:

a known state in the instrumented version of the original set of instructions (e.g., FIG. 3, Instrumented Cod 320, a known state as 320-B of said Instrumented Code 320, col.6: 31 – col.7: 13),

wherein encountering the second trigger condition (e.g., encountering Back-Edge Check 341, col.7: 14-67)

causes the switching of execution from the instrumented version of the original set of instructions back to the original set of instructions (e.g., FIG. 3, switching to original instructions (Checking Code) 330, col.6: 31 – col.7: 13)

to occur at a next location of known state in the instrumented version of the original set of instructions (e.g., a known state as 320-B as set forth above, encountering the Back-Edge Check 341, following 361, and switching to A of original instructions (Checking Code) 330, col.7: 14-67).

5. Rejections under 35 USC 103 (Remarks, page 15):

Dependent claims 4, 7, 11, 14, 20, and 23 are also rejected based on virtue of their dependencies on rejected base claims 1, 9, and 18.

Accordingly, Applicant's arguments are not persuasive and the examiner respectfully maintain the 35 USC §102(e) rejection over claims 1-2, 4, 6-9, 11, 13-18, 20, and 22-26.

Claim Rejections – 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 18, 20, and 22-23 are directed to a computer-readable medium and may "...be distributed over a network coupled computer systems so that the computer readable code is stored and executed in a distributed fashion" (specification, [35], lines 6-8), which explicitly directs to a communication medium.

A computer-readable medium product is a tangible physical article or object, some form of matter, which a signal is not. That the other two product classes, machine and composition of matter, require physical matter is evidence that a manufacture was also intended to require physical matter. A signal, a form of energy, does not fall within either of the two definitions of manufacture. Thus, a signal does not fall within one of the four statutory classes of Sec. 101 – see MPEP 2106

Under the principles of compact prosecution, claims 18, 20, and 22-23 have been examined as the Examiner anticipates the claims will be amended to obviate these 35 USC § 101 issues. For example (proposal only), - -A computer readable storage medium ...- - as disclosed in page 18, [35], lines 2-6.

Claim Rejections – 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-2, 6, 8-9, 13, 15-18, 22, and 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Chilimbi (art of record, US Patent No. 7,140,008).

Claim 1:

Chilimbi discloses *a method for obtaining traces of a program, comprising:*

(a) obtaining an original set of instructions which define the program, wherein the original set of instructions does not include an instrumentation instruction (e.g., FIG. 3, original set of instructions 330, col.7: 7-13; col.6: 36-52);

(b) obtaining an instrumented version of the original set of instructions, wherein the instrumented version of the original set of instructions includes each instruction in the original set of instructions and a number of instrumentation instructions defined to generate traces (e.g., col.7: 1-6; col.6: 53-60),

wherein the number of instrumentation instructions are dispersed in a substantially uniform manner throughout the instrumented version of the original set of instructions (e.g., col.3: 56 – col.4: 47; col.5: 44 - col.6: 29);

(c) executing the original set of instructions (e.g., FIG. 3, in the original set of instructions 330, executing A → B, col.6: 61 – col.7: 13);

(d) switching execution from the original set of instructions to the instrumented version of the original set of instructions (e.g., FIG. 2 and 3, switching execution from original code (Checking Code) 230/330 to the instrumented version (Instrumented Code) 220/320, col.6: 31 – col.7: 13)

upon encountering a first trigger condition (e.g., FIG. 2 and 3, Entry Check 240/340 and Back-Edge Check 241/341, col.7: 14-67),

wherein the first trigger condition is based on an elapsed time of execution (e.g., col.3: 52 – col.4: 29, execution time of original instructions must be lower than 100% time of total execution (an elapsed time of execution), wherein if a checking phases counter “nCheck” reaches zero, execution of the program is transitioned to the instrumented code as acknowledged by the Applicant - see Remarks, page 10, lines 16-21);

a known state in the original set of instructions (e.g., FIG. 3, original set of instructions (Checking Code) 330, a known state as B of said original set of instructions (Checking Code) 330, col.6: 31 – col.7: 13),

encountering the first trigger condition (e.g., encountering Back-Edge Check 341, col.7: 14-67)

causes the switching of execution from the original set of instructions to the instrumented version of the original set of instructions (e.g., FIG. 3, switching to Instrumented Code 320, col.6: 31 – col.7: 13)

to occur at a next location of known state in the original set of instructions (e.g., a know state B as set forth above, encountering the Back-Edge Check 341, following 371, and switching to A of Instrumented Code 320, col.7: 14-67)

(e) executing the instrumented version of the original set of instructions so as to generate traces through execution of one or more of the number of instrumentation instructions (e.g., FIG. 3, executing A in 320 → B also in 320);

(f) switching execution from the instrumented version of the original set of instructions back to the original set of instructions (e.g., FIG. 3, switching execution from the instrumented version (Instrumented Code) 320 to the original code (Checking Code) 330, col.6: 31 – col.7: 13)

upon encountering a second trigger condition (e.g., col.7: 14-67),

wherein the second trigger condition is based on an elapsed time of execution (e.g., col.3: 52 – col.4: 29, execution time of the instrumented version must be lower than 100% time of total execution (an elapsed time of execution), wherein if a profiling phase counter “nInstr” reaches zero, execution of the program is transitioned to

the original instructions (Checking Code) 330 as acknowledged by the Applicant - see Remarks, page 13:25 – page: 14: 4)

a known state in the instrumented version of the original set of instructions (e.g., FIG. 3, Instrumented Cod 320, a known state as B of said Instrumented Code 320, col.6: 31 – col.7: 13),

wherein encountering the second trigger condition (e.g., encountering Back-Edge Check 341, col.7: 14-67)

causes the switching of execution from the instrumented version of the original set of instructions back to the original set of instructions (e.g., FIG. 3, switching to original instructions (Checking Code) 330, col.6: 31 – col.7: 13)

to occur at a next location of known state in the instrumented version of the original set of instructions (e.g., a known state as 320-B as set forth above, encountering the Back-Edge Check 341, following 361, and switching to A of original instructions (Checking Code) 330, col.7: 14-67); and

(g) repeating operations (c) through (f) (e.g., col.7: 14-67).

Claim 2:

The rejection of claim 1 is incorporated. Chilimbi also discloses *the switching of execution from the original set of instructions to the instrumented version of the original set of instructions occurs at a location of known state in the original set of instructions (e.g., col.5: 44-53; col.1: 52-58).*

Claim 6:

The rejection of claim 1 is incorporated. Chilimbi also discloses *the next location of known state in the instrumented version of the original set of instructions corresponds to an instruction common to both the instrumented version of the original set of instructions and the original set of instructions (e.g., FIG. 4, statement 440, col.7: 33-49).*

Claim 8:

The rejection of claim 1 is incorporated. Chilimbi also discloses *execution of the instrumented version of the original set of instructions is performed by an emulator (e.g., FIG. 2, col.6: 32-52).*

Claim 9:

Chilimbi also a *method for obtaining traces of a program, comprising:*

(a) executing an original code which defines the program, wherein the original code does not include an instrumentation instruction (e.g., col.6: 61 – col.7: 13);

(b) switching execution from the original code to an instrumented code upon reaching a next location of known state in the original code after having executed the original code for a specified first time period (e.g., col.6: 31 – col.7: 67),

wherein the instrumented code includes each instruction present in the original code and a number of instrumentation instructions dispersed in a substantially uniform manner throughout the instrumented code, wherein the number of instrumentation instructions are defined to generate traces (e.g., col.7: 1-25; col.3: 56 – col.4: 47; col.5: 44 – col.6: 29);

(c) executing the instrumented code so as to generate traces through execution of one or more of the instrumentation instructions (e.g., FIG. 3, executing A in 320 → B also in 320, col.7: 14-67);

(d) switching execution from the instrumented code back to the original code upon reaching a next location of known state in the instrumented code after having executed the instrumented code for a specified second time period (e.g., col.7: 7-44); and

(e) repeating operations (a) through (d) (e.g., col.7: 14-67).

Claims 13:

The rejection of claim 9 is incorporated. Chilimbi also discloses *the next location of known state in each of the instrumented code and original code corresponds to an instruction common to both the instrumented code and the original code (e.g., col.6: 31 – col.7: 67).*

Claim 15:

The rejection of claim 9 is incorporated. Chilimbi also discloses *both switching execution from the original code to the instrumented code and switching execution from the instrumented code back to the original code are performed using return addresses during processing of function calls (e.g., FIG. 4, statement "goto", col.7: 14-32).*

Claim 16:

The rejection of claim 9 is incorporated. Chilimbi also discloses *defining a map of instruction addresses, the map of instruction addresses identifying correspondences between instruction addresses in the original code and instruction addresses in the instrumented code (e.g., col.9: 3-27).*

Claim 17:

The rejection of claim 16 is incorporated. Chilimbi also discloses *both switching execution from the original code to the instrumented code and switching execution from the instrumented code back to the original code are performed using the map of instruction addresses (e.g., col.9: 11-63).*

Claim 18:

Chilimbi discloses *a computer readable storage medium containing program instructions for obtaining traces of a program, comprising:*

program instructions for executing an original code, wherein the original code does not include an instrumentation instruction (e.g., col.6: 31 – col.7: 13);

program instructions for switching execution from the original code to an instrumented code upon reaching a next location of known state in the original code after having executed the original code for a specified first time period (e.g., col.7: 14-67),

wherein the instrumented code includes each instruction present in the original code and a number of instrumentation instructions dispersed in a substantially

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uniform manner throughout the instrumented code, wherein the number of instrumentation instructions are defined to generate traces (e.g., col.3: 52 – col.4: 29; col.6: 36-62; col.7: 7-44);

program instructions for executing the instrumented code so as to generate traces through execution of one or more of the instrumentation instructions (e.g., col.7: 1-6; col.6: 53-60); and

program instructions for switching execution from the instrumented code back to the original code upon reaching a next location of known state in the instrumented code after having executed the instrumented code for a specified second time period (e.g., col.6: 31 – col.7: 67).

Claim 22:

The rejection of claim 18 is incorporated. Chilimbi also discloses *the next location of known state in each of the instrumented code and original code corresponds to an instruction common to both the instrumented code and the original code (e.g., col.3: 52 – col.4: 29).*

Claim 24:

The rejection of claim 18 is incorporated. Chilimbi also discloses *the program instructions for switching execution from the original code to the instrumented code and the program instructions for switching execution from the instrumented code back to the original code are defined to use return addresses during processing of function calls to effect the switching (e.g., FIG. 4, col.7: 14-32).*

Claim 25:

The rejection of claim 18 is incorporated. Chilimbi also discloses *program instructions for defining a map of instruction addresses, the map of instruction addresses identifying correspondences between instruction addresses in the original code and instruction addresses in the instrumented code (e.g., col.9: 3-27).*

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Claim 26:

The rejection of claim 25 is incorporated. Chilimbi also discloses *the program instructions for switching execution from the original code to the instrumented code and the program instructions for switching execution from the instrumented code back to the original code are defined to use the map of instruction addresses to effect the switching* (e.g., col.9: 11-63).

Claim Rejections – 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4, 7, 11, 14, 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chilimbi in view of US Patent Publication No. 2004/0154010 A1 to Marcuello et al. (art made of record, hereinafter "Marcuello").

Claim 4:

The rejection of claim 1 is incorporated. Chilimbi does not explicitly disclose *the first trigger condition is defined such that execution of the original set of instructions accounts for more than about 90 percent of the elapsed time of execution*.

However, in an analogous art, Marcuello further discloses *the first trigger condition is defined such that execution of the original set of instructions accounts for more than about 90 percent of the elapsed time of execution* (e.g., [0024-0025]).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Marcuello 's teaching into Chilimbi's teaching. One would have been motivated to do so to predefine said threshold (90 percent of the

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elapsed time) for selected factors such as application requirements and/or machine resource availability.

Claim 7:

The rejection of claim 1 is incorporated. Marcuello further discloses *the second trigger condition is defined such that execution of the instrumented version of the original set of instructions accounts for less than about 10 percent of the elapsed time of execution (e.g., [0031])*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Marcuello 's teaching into Chilimbi's teaching. One would have been motivated to do so to as set forth above.

Claim 11:

The rejection of claim 9 is incorporated. Marcuello further discloses *first and second time periods are specified such that execution of the original code accounts for more than about 90 percent of the total elapsed time of execution of both the original code and instrumented code (e.g., [0024-0025], [0031])*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Marcuello 's teaching into Chilimbi's teaching. One would have been motivated to do so to predefine said threshold (90 percent of the elapsed time) for selected factors such as application requirements and/or machine resource availability.

Claim 14:

The rejection of claim 9 is incorporated. Marcuello further discloses *first and second time periods are specified such that execution of the instrumented code accounts for less than about 10 percent of the total elapsed time of execution of both the original code and instrumented code (e.g., [0024-0025], [0031])*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Marcuello 's teaching into Chilimbi's teaching. One would have been motivated to do so as set forth above.

Claim 20:

The rejection of claim 18 is incorporated. Marcuello further discloses *first and second time periods are specified such that execution of the original code accounts for more than about 90 percent of the total elapsed time of execution of both the original code and instrumented code e.g., [0024-0025], [0031]*).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Marcuello 's teaching into Chilimbi's teaching. One would have been motivated to do so to predefine said threshold (90 percent of the elapsed time) for selected factors such as application requirements and/or machine resource availability.

Claim 23:

The rejection of claim 18 is incorporated. Marcuello further discloses *first and second time periods are specified such that execution of the instrumented code accounts for less than about 10 percent of the total elapsed time of execution of both the original code and instrumented code e.g., [0024-0025], [0031]*).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Marcuello 's teaching into Chilimbi's teaching. One would have been motivated to do so as set forth above.

Conclusion

12. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone/fax numbers are (571) 272 8570 and (571) 273 8570, respectively. The examiner can normally be reached on Tuesday, Thursday, and Friday from 6:00AM to 6:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. Dao



TUAN DAM
SUPERVISORY PATENT EXAMINER